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(54) VIDEO EDITING DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To edit video and audio in matching with a time code and to convert them into an MPEG format by performing capture processing with a DV format as it is as DV data for video and audio signals photographed by a household camera which is incorporated in VTR as a digital video(DV) device.
SOLUTION: Compressed data of video and audio from a DV camera 101 controlled by a camera which controls a part 104 are fetched by a DV capturing part 102stored in a memory 103 and decoded by a DV decoder 106. An MPEG encoder 107 converts the decoded video and audio data into an MPEG stream 108 to outputand a tape information acquiring part 105 obtains the information of a magnetic tape of the DV camera 101. An edition control part 109 performs editing by using control information from each part and edition information produced by an edition information generating part 110 by using a time code and date and hour information held by a database 111. Thusit is possible to perform accurate edition due to the time code of compressed data.

CLAIMS

[Claim(s)]
[Claim 1]Compressed data of an image currently recorded on magnetic tape in a predetermined digital video format and a sound characterized by comprising the following is taken out and editedA video editing device changed into data of an MPEG format
A digital video device which was provided with an IEEE1394 interface and recorded

said compressed data.
A DV capture means to incorporate said compressed data from said digital video device via said IEEE1394 interface.
A memory holding said compressed data which said DV capture means incorporated.
A video device control means which controls said digital video device via said IEEE1394 interfaceA tape information acquisition means which acquires magnetic tape information via said IEEE1394 interfaceDV decoder which considers said compressed data as an input and decodes an image and voice dataAn MPEG encoder which considers an image and voice data which were decoded as an inputand changes them into an MPEG stream of data of an MPEG formatAn edit control means to manage control information and compilation information which are acquired from said DV capture meanssaid video device control meanssaid tape information acquisition meanssaid DV decoderand said MPEG encoderand to control each meansAn editing information generating means which generates said compilation informationa time code of said compressed datamagnetic tape information on date information.

[Claim 2]Said edit control means is rewound to the starting point of magnetic tape by said video device control means at the time of an editing startThe video editing device according to claim 1 having a means to distinguish a position on which said compressed data of an editing object on magnetic tape is recorded by a time code and date information acquirable by said tape information acquisition means at the time of editing work.
[Claim 3]The video editing device comprising according to claim 1 or 2:
Said edit control means is said compilation information.
A means to check that said magnetic tape is magnetic tape which has been the target of edit from a time code and date information acquirable by said tape information acquisition means at the time of editing work.

[Claim 4]Compressed data of an image currently recorded on magnetic tape in a predetermined digital video format and a sound characterized by comprising the following is taken out and editedA video editing device changed into an MPEG format
A digital video device which was provided with an IEEE1394 interface for digital data transmissionand recorded said compressed data.
A DV capture means to incorporate said compressed data from said digital video device via said IEEE1394 interface.
A memory holding said compressed data which said DV capture means incorporated.
A video device control means which controls said digital video device via said IEEE1394 interfaceA tape information acquisition means which acquires information on magnetic tape via said IEEE1394 interfaceDV decoder which considers said compressed data as an input and decodes an image and voice

dataMagnetic tape informationincluding an MPEG encoder which considers an image and voice data which were decoded as an inputand is changed into an MPEG stream which is an output of an MPEG formata time code of said compressed datadate informationetc.

[Claim 5]Said position discrimination means from information on said magnetic tape in said databaseand magnetic tape information at the time of edit obtained from said tape information acquisition means. The video editing device according to claim 4 having a means to check that said magnetic tape is magnetic tape which has been the target of edit.
[Claim 6]Said DV capture means compares a time code of said incorporated compressed dataa head time code of the edit section obtained from said edit control meansand a termination time codeThe video editing device according to claim 1234or 5 transmitting only said compressed data within the edit section to a memory.
[Claim 7]When performing format conversionsaid edit control means a next frame of a frame which incorporated at least 1 or the multiple frame [every] aforementioned compressed data from a head of the edit sectionand ended format conversion as a head of the edit sectionThe video editing device according to claim 6 controlling said DV capture means and said video device control means.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the video editing device which takes out and edits into a noncommercial camcorder/movie the data in which the image currently recorded in the predetermined digital-video-recording format (it is hereafter described as a DV format) and voice data were compressed.
[0002]
[Description of the Prior Art]What was indicated to JP9-154099A as a conventional video editing device is known. Hereaftersaid conventional video editing device is explained with reference to drawings.
[0003]Drawing 3 is a block diagram showing the composition of this conventional video editing device. When taking a photograph by video integral-type VTR301the time code corresponding to the picture image data compressed into edit and its picture image data is recorded on the memory 308. When editing the raw material recorded on the magnetic tape of VTR301the compressed picture image data recorded on the memory 308 is read to the editing machine 309and is played. The picture image data compressed in this editing machine 309 is edited. The edit point which is a change over point for edit to this compressed picture image data is specified. The time code corresponding to picture image data is also recorded on the memory 308. Thereforeedit point information and the position on which the

video signal of magnetic tape is recorded can be matched by generating edit point information from this time code.
[0004]With specification of an edit pointthe section information showing the section of a raw material to edit into is also specified. Specification of an edit point and the section will send out the command and compilation information which direct the copy start of the raw material from the magnetic tape of VTR301 to the hard disk (HDD) 306 from the editing machine 309 to the controller 307. The command and compilation information which direct the copy start of the sent-out raw material are received by the controller 307. Based on the compilation information which the controller 307 receivedthe magnetic tape playback equipment 302 is controlled by the controller 307and playback is performed only for the section specified using the section information included in compilation information. The reproduced analog video signal is supplied to A/D converter 303is sampled on predetermined frequencyand is changed into a digital video signal. This digital video signal is sent to the compression circuit 304. In the compression circuit 304compression encoding of the error correction code is added and carried out by the JPEG system or an MPEG2 systemfor example. The digital video signal by which compression encoding was carried out is supplied to the formatting circuit 305and formatting is carried out so that it can record on the hard disk 306. The compression digital video signal by which formatting was carried out is sent to the hard disk 306.It is similarly processed about speech signal data. Thusthe raw material currently recorded on VTR301 is edited based on compilation informationand is saved on the hard desk 306.
[0005]
[Problem(s) to be Solved by the Invention]According to the above-mentioned video editing devicesince picture image data and voice data are processed in a separate coursethe image at the time of compression and audio multiplexing pose a problem. It is a camcorder/movie of a SD-VCR standard that time code control can be performed with noncommercial VTRand it is difficult to incorporate a video signal and an audio signal in accordance with a time code with VTR of analog recording. When conversion to an MPEG format cannot be performed in real timeit becomes still more difficult to incorporate an image and a sound in accordance with a time code. Also in the noncommercial camcorder/movie of the SD-VCR standard which can perform time code controlwhen the portion (it is hereafter described as a blank part) by which an image and an audio signal are not recorded on magnetic tape was madethere was a problem that a time code was reset.
[0006]By taking a photograph with a noncommercial camcorder/movieand incorporating and processing the image and voice data which were recorded on magnetic tape with a DV formatthis invention is united correctlyand is edited into a time codeand an object of this invention is to provide a video editing device convertible into an MPEG format. Furtherthis invention edits the data of a DV format and an object of this invention is to provide a video editing device convertible into the data of an MPEG format at any time. An object of this invention is to provide the video editing device which can perform edit and format

conversioneven if the photoed magnetic tape has a blank part further.
[0007]
[Means for Solving the Problem]A video editing device of this invention edits compressed data of an image currently recorded on magnetic tape in a digital video format (it is hereafter written as a DV format)and a soundand this invention is characterized by that a video editing device changed into data of an MPEG format comprises the following.
A digital video device which is provided with an IEEE1394 interface and reproduces said compressed data (it is hereafter described as DV device).
A DV capture means to incorporate said compressed data from said DV device via said IEEE1394 interface.
A memory holding said compressed data which said DV capture means incorporated.
A video device control means which controls said DV device via said IEEE1394 interfaceA tape information acquisition means which acquires information on magnetic tape via said IEEE1394 interfaceDV decoder which inputs said compressed data and is decoded to an image and voice dataAn MPEG encoder which inputs an image and voice data which were decoded and is changed into an MPEG streamAn edit control means to manage control information and compilation information which are acquired from said DV capture meanssaid video device control meanssaid tape information acquisition meanssaid DV decoderand said MPEG encoderand to control each meansAn editing information generating means which generates said compilation informationand a database which has the information on magnetic tapesuch as a time code of said compressed dataand date information.
By this compositionwhile compressed data of an image currently recorded on magnetic tape and a sound has been a DV formatit is incorporatedand exact edit is attained with a time code of compressed data. Multiplexing of a video signal at the time of format conversion and an audio signal can be performed simply and correctly.
[0008]A video editing device by other viewpoints of this invention is provided with the following.
DV device which takes out and edits into magnetic tape compressed data currently recorded by a DV formatand is provided with an IEEE1394 interface in a video editing device changed into data of an MPEG formatand plays said compressed data.
A DV capture means to incorporate said compressed data from said DV device via said IEEE1394 interface.
A memory holding said compressed data which said DV capture means incorporated.
DV decoder which inputs said compressed data as a video device control means which controls said DV device via said IEEE1394 interfaceand a tape information acquisition means which acquires tape information via said IEEE1394 interfaceand decodes an image and voice data.

[0009]An MPEG encoder which this video editing device inputs further an image and voice data which were decodedand is changed into an MPEG streamA database which has tape informationsuch as a time code of said compressed dataand date informationA position discrimination means which distinguishes whether it is after a blank whose recording position of magnetic tape is what position from said tape information in said databaseand information on magnetic tape at the time of editing work obtained from said tape information acquisition meansSaid DV capture meanssaid video device control meanssaid tape information acquisition meansAn edit control means to manage control information and compilation information which are acquired from said DV decodersaid MPEG encoderand a position discrimination meansand to control each meansIt has an editing information generating means which generates said compilation informationcontrol of said DV device and incorporation of said compressed data are performed using an IEEE1394 interfaceand edit of an image and voice data and format conversion are performed.
[0010]It was recorded on magnetic tape by this composition. Since compressed data of a DV format can be incorporated and processed with a DV formatit can double correctly and can edit into a time code in compressed data. Multiplexing of picture image data and voice data can be performed simply and correctly at the time of conversion to data of an MPEG format. A time code which can be acquired from magnetic tape by a position discrimination means at the time of editing work when magnetic tape which carried out photograph recording has a blank partBy distinguishing whether it is after a blank part whose recording position of compressed data on magnetic tape is what position from magnetic tape information in date information and a databaseeven if it is magnetic tape with a blank partit can edit.
[0011]
[Embodiment of the Invention]Hereafterthe suitable example of this invention is describedreferring to drawing 1 thru/or drawing 2.
[0012]<<Example 1>> Drawing 1 is a block diagram showing the composition of the video editing device of Example 1 concerning this invention. The video editing device of Example 1 is provided with the following.
DV camera 101 as a digital video device provided with IEEE1394 interface 101a.
The DV capturing part 102 connected to DV camera 101the memory 103and the edit control part 109 via IEEE1394 interface 101a.
The memory 103 connected to the DV capturing part 102 and the DV decoder 106.
An IEEE1394 interface is the high-speed serial interface standardized in IEEEand is the hardware standardized as an interface for connecting a noncommercial electric appliance and a computer. The DV capturing part 102 removes the IEEE1394 header given to the data transmitted through an IEEE1394 interfaceand after returning to the form of DV datait has a function transmitted to the memory 103. The camera control part 104 is connected between DV camera 101 and the edit control part 109. The tape information acquisition part 105 is connected

between DV camera 101 and the edit control part 109.
[0013]The memory 103 is connected to the input edge of the DV decoder 106and the outgoing end of the DV decoder 106 is connected to the input edge of MPEG encoder 107. The compilation information generation part 110 is connected to the edit control part 109and the database 111 is connected to the compilation information generation part 110.
[0014]Operation of the video editing device of Example 1 is explained below. The compilation information generation part 110 performs rearrangement and deletion of data based on the magnetic tape information on the database 111. And it outputs to the edit control part 109 by making into compilation information the information on the edit scene which consists of scene informationsuch as a head of each scenea time code of a terminationdate informationand ATN (Absolute Track Number)and parameter informationsuch as image sizethe bit rateand image quality. The information which decides whether to output MPEG stream 108 of an output in which format of MPEG1 and 2 is also included in this compilation information.
[0015]Based on this compilation informationthe edit control part 109 carries out edit of a video signal and speech signal data. When it roughly dividesthere are three processes of initial settingsearch of a sceneincorporation of dataand format conversion in edit. DV camera 101 used for edit contains the IEEE1394 interfaceand outputs magnetic tape informationincluding the data of the DV format recorded on magnetic tape through this IEEE1394 interfacea time codedate informationATNetc. DV camera 101 receives camera control signalssuch as reproductiona stopand a rapid traversefrom the camera control part 104. The camera control part 104 receives a camera control signal from the edit control part 109and controls DV camera 101 via an IEEE1394 interface.
[0016]Firstin initial settingto MPEG encoder 107the edit control part 109 sets parameterssuch as image qualityimage sizeand the bit rateand outputs a control signal by predetermined parameter information. The edit control part 109 sets a parameter to the DV decoder 106 decode according to the image size coded with MPEG encoder 107.
[0017]Nextin search of a scenethe edit control part 109 sends a time code acquisition signal to the tape information acquisition part 105and receives the time code of magnetic tape at present. The received time code is compared with the head time code of an edit sceneand it is distinguished by any the head shall be pulled out between a rapid traverse or rewinding. Namelyin after this timea head time code fast forwardsandin a front caseit rolls back. At the time of a rapid traversethe camera control part 104 receives the camera control signal of a rapid traverse from the edit control part 109and DV camera 101 is controlled to fast forward a tape. While the tape is fast forwardedthe edit control part 109 receives the time code acquired from the tape information acquisition part 105 during a rapid traverseand compares the received time code with the head time code of an edit scene.
[0018]Acquisition and comparison of a time code are repeated until the acquired

time code becomes a thing several seconds before the head time code of an edit scene. When a time code becomes a thing several seconds before the head time code of an edit scenethe edit control part 109 sends the camera control signal of a halt to the camera control part 104and makes a rapid traverse halt. What is necessary is just to halt several seconds before the head time code of an edit sceneand it is not necessary to unite correctly at this time. It is because the DV capturing part 102 has the composition of incorporating a digital video data (it is hereafter called DV data for short) after detecting the head of an edit scene so that this reason may be explained in detail later.

[0019]Nextin incorporation of data and conversion of a formattwo kindsthe case where format conversion is possible in real timeand when it cannot docan be considered. Howeversince both operations of the DV decoder 106 and MPEG encoder 107 are the sameoperation of the DV decoder 106 is explained previously. And when it next is not a case of real timeand real timeoperation of the DV capturing part 102 and edit control part 109 is explained.

[0020]The DV decoder 106 receives a decoding start signal from the edit control part 109and decodes the digital video data (it is hereafter written as DV data) memorized by the memory 103. When there is no data which should be decoded in the memory 103 at this timea data empty signal is sent to the edit control part 109and decoding is stopped. If decoding for one frame is completeda decoding terminate signal will be sent to the edit control part 109. A decoding terminate signal is transmitted to MPEG encoder 107.

[0021]If a decoding terminate signal is received from the edit control part 109MPEG encoder 107 will receive the decode data for one frame from the DV decoder 106and will code it by an MPEG format. MPEG encoder 107 will send a frame process terminate signal to the edit control part 109if coding processing is ended. It carries out by repeating thisand coding processing will be ended if an encoding terminate signal is inputted from the edit control part 109. If coding of a predetermined frame number finishesMPEG stream 108 of an output will be outputted each timeand it will write in digital recording media which omitted the graphic displaysuch as a hard disk and DVD.

[0022]When format conversion is possible in real timethe DV capturing part 102 is incorporated from the edit control part 109receives a start signalthe head of an edit sceneand the time code of a terminationand starts incorporation of DV data. If the time code in the sub-code of incorporated DV data becomes equal to the head time code of an edit scenethe DV capturing part 102 will start DV data transfer to the memory 103. Before transmitting DV datathe DV capturing part 102 checks whether incorporated DV data is following DV data incorporated before by comparing a time code. Howeverthis comparison is not performed at the time of transmission of the beginning of an edit scene.

[0023]If the time code is not continuingthe DV capturing part 102 ends incorporation of DV dataand sends an incorporation terminate signal and the last time code (time code of DV data transmitted at the end) to the edit control part 109. If the time code is continuingthe DV capturing part 102 will transmit DV data

for one frame to the memory 103and will send a transmission terminate signal to the edit control part 109. If the time code of transmitted DV data is not in agreement with a termination time codethe DV capturing part 102 waits to send a decoding terminate signal from the edit control part 109. If a decoding terminate signal is sentthe DV capturing part 102 will transmit the data of the following frame to the memory 103. If the time code of incorporated DV data is in agreement with a termination time codethe DV capturing part 102 will end incorporation of DV dataand will send an incorporation terminate signal and the last time code to the edit control part 109.

[0024]The edit control part 109 is incorporated into the DV capturing part 102and sends a start signalthe head of an edit sceneand the time code of a termination. Nextthe camera control signal of a playback start is sent to the camera control part 104and a tape is played. From the DV capturing part 102the edit control part 109 will send a decoding start signal to the DV decoder 106if both receive a frame process terminate signal for a transmission terminate signal from MPEG encoder 107respectively. Howeverat the time of the first transmissionif only a transmission terminate signal is receivedthe edit control part 109 will send a decoding start signal to the DV decoder 106. And the edit control part 109 will transmit the decoding terminate signal to the DV capturing part 102 and MPEG encoder 107if a decoding terminate signal is received from the DV decoder 106.

[0025]ThusDV data transfer from the DV capturing part 102 to the memory 103Decoding to video signal data and speech signal data from DV data in the DV decoder 106Repeating the coding to the MPEG format in MPEG encoder 107the edit control part 109 waits to incorporate from the DV capturing part 102 and to send a terminate signal and the last time code. When an incorporation terminate signal and the last time code are sentthe edit control part 109 sends the camera control signal of a halt to the camera control part 104and makes playback of magnetic tape suspend. And the edit control part 109 compares the last time code with the termination time code of an edit scene. If the last time code and the termination time code are in agreementit will move from the edit control part 109 to the search process of the following edit scene. If the last time code and the termination time code are not in agreementthe edit control part 109 pulls out the head by transposing the time code of the next frame of the last time code to the head time code of the present edit sceneand continues incorporation of DV data and conversion of a format. If the scene which repeats and edits the operation explained above is lostthe edit control part 109 will wait for the frame process terminate signal from MPEG encoder 107. If a frame process terminate signal is receivedthe edit control part 109 will send an encoding terminate signal to MPEG encoder 107and will end edit and format conversion.

[0026]When not performing format conversion in real timefrom the edit control part 109the DV capturing part 102 receives an incorporation start signalthe head of an edit sceneand the time code of a terminationand starts incorporation of DV data. If the time code in the sub-code of incorporated DV data becomes equal to the head time code of an edit scenethe DV capturing part 102 will start DV data

transfer to the memory 103. Before carrying out DV data transferthe DV capturing part 102 checks whether incorporated DV data is following DV data incorporated before by comparing a time code. Howeverthis comparison is not performed at the time of transmission of the beginning of an edit scene. If the time code is not continuingthe DV capturing part 102 ends incorporation of DV dataand sends an incorporation terminate signal and the last time code to the edit control part 109. If the time code is continuingDV data for one frame will be transmitted to the memory 103.

[0027]If the time code of transmitted DV data is in agreement with a termination time codethe DV capturing part 102 will end incorporation of DV dataand will send an incorporation terminate signal and the last time code to the edit control part 109. If the time code of transmitted DV data is not in agreement with a termination time codethe DV capturing part 102 is incorporated from the edit control part 109and checks whether the terminate signal is sent. If the incorporation terminate signal is sentthe DV capturing part 102 will end incorporation of DV dataand will send an incorporation terminate signal and the last time code to the edit control part 109. If the incorporation terminate signal is not sentthe DV capturing part 102 incorporates DV data of the following frameand transmits the DV data to the memory 103. And the DV capturing part 102 repeats this ****** until the time code and termination time code of DV data are in agreement or an incorporation terminate signal is sent.

[0028]The edit control part 109 is incorporated to the DV capturing part 102and sends a start signalthe head of an edit sceneand the time code of a termination. Nextthe edit control part 109 sends the camera control signal of a playback start to the camera control part 104and reproduces magnetic tape. The edit control part 109 sends the camera control signal of a halt to the camera control part 104and makes playback of magnetic tape suspend after playback for several seconds. The edit control part 109 sends an incorporation terminate signal to the DV capturing part 102and terminates incorporation of DV data. When incorporating from the DV capturing part 102 and receiving a terminate signal between the playbacks for several of these secondsthe edit control part 109 sends the camera control signal of a halt to the camera control part 104and makes playback of magnetic tape suspend.

[0029]The edit control part 109 replaces with the head time code of an edit scene the time code of the next frame of the last time code sent from the DV capturing part 102. In order to guarantee the continuity of DV data at the time of incorporation of the following DV datathe edit control part 109 sends the camera control signal of top return to the camera control part 104and rewinds magnetic tape by several frames.

[0030]The edit control part 109 sends a decoding start signal to the DV decoder 106. Howeverafter the 2nd framethe edit control part 109 will send a decoding start signal to the DV decoder 106if a frame process terminate signal is received from MPEG encoder 107. If a decoding terminate signal is received from the DV decoder 106the edit control part 109 will transmit a decoding terminate signal to

MPEG encoder 107. Thusthe edit control part 109 repeats DV decoding and MPEG encodingand performs them.

[0031]The edit control part 109 compares the last time code with the time code of a terminationif the data empty signal sent when all DV data in the memory 103 finishes being decoded is received from the DV decoder 106. If the last time code and the termination time code are not in agreementthe edit control part 109 incorporates above-mentioned DV dataand performs format conversion. If there is a scene to edit when the last time code and a termination time code are in agreementthe edit control part 109 will perform search operation as above-mentionedand will perform incorporation of DV data and format conversion. If there is no edit scenethe edit control part 109 will wait for the frame process terminate signal from MPEG encoder 107. If a frame process terminate signal is receivedthe edit control part 109 will send an encoding terminate signal to MPEG encoder 107and will end edit and format conversion.

[0032]When the magnetic tape of an editing object has a blank partthe information which shows whether it is an edit scene after the blank part of what position is also added to the information on each edit scene of the database 111. For exampleblank number"1" is added to the edit scene between the 1st and the 2nd blank part. The edit control part 109 receives the compilation information included the blank number from the compilation information generation part 110. And at the time of initial settingthe edit control part 109 sends the camera control signal of rewinding to the camera control part 104and rewinds magnetic tape to the starting point.

[0033]When pulling out the head of the first edit scenethe edit control part 109 makes the camera control part 104 fast forward magnetic tape as the search operation mentioned above. The edit control part 109 receives the time code acquired from the tape information acquisition part 105 during a rapid traverseand compares with the head time code of an edit scene. It uses that a time code is reset at this time whenever a blank part entersThe edit control part 109 counts the number of times of reset of a time codeand pulls out the head of the first edit scene with the time code whose blank number added to this number of times of reset and a head time code corresponds.

[0034]When performing search after this and the edit control part 109 pulls out the head with a rapid traverse on the basis of the number of times of reset when the head of the first edit scene is pulled outwhenever it discovers a blank partthe number of times of reset is added. When pulling out the head by rewindingwhenever the edit control part 109 discovers a blank partit subtracts the number of times of reset. Thusthe edit control part 109 can be performedchecking whether TE record of the edit scene of an editing object is relatively carried out after the blank part of what position.

[0035]The edit control part 109 compares the date information in compilation information with the date information acquired from magnetic tapewhen the first search is performed. Therebythe edit control part 109 can distinguish whether it is the information on the magnetic tape which the magnetic tape information on the

database 111 is going to editand can tell an editor about it. [it]
[0036]<<Example 2>> Drawing 2 is a block diagram showing the composition of the video editing device of Example 2 concerning this invention. The video editing device of this Example 2 adds the position discrimination part 212 to the video editing device of Example 1. Identical codes are attached and explained to Example 1 and identical parts.
[0037]While the position discrimination part 212 is connected to the edit control part 209it is connected to the database 111 and database 111 magnetic-tape information is inputted. The explanation which overlaps since other composition is the same as that of drawing 1 is omitted.
[0038]Operation of the video editing device of this Example 2 is explained below. As contents of operationthere are three processes of initial settingsearchincorporation of dataand format conversion like the above-mentioned Example 1. Since fundamental operation is the same as Example 1the duplicate explanation is omitted and only a point of being below different is explained. Firstthe database 111 has the head of each scenea time code of a terminationdate informationATNand the magnetic tape information that consists of a blank number. Based on the magnetic tape information on the database 111the compilation information generation part 110Rearrangement and a cut of DV data are performed and it outputs to the edit control part 209 by making into compilation information the head of each scenethe time code of a terminationdate informationATNedit scene information that consists of scene information of a blank numberand parameter informationsuch as image sizethe bit rateand image quality. The information which decides whether to output MPEG stream 108 of an output in which format of MPEG1 and 2 is also included in this compilation information.
[0039]In an initial-setting processthe position discrimination part 212 outputs the tape information acquisition signal for acquiring the time code at present and date information of magnetic tape in the edit control part 209. The edit control part 209 which received this tape information acquisition signal acquires the time code at present and date information of magnetic tape through the tape information acquisition part 105and transmits them to the position discrimination part 212. The position discrimination part 212 compares whether this time code and date information are between the head of each edit scene currently held at the database 111the time code of a terminationand date informationand looks for an edit scene. And when an edit scene is foundthe position discrimination part 212 sends the blank number of the found edit scene to the edit control part 209. When an edit scene is not able to be foundthe position discrimination part 212 judges with it not being the information on the magnetic tape which the tape information currently held at the database 111 is going to editand an editor is told about it.
[0040]In search of a scenethe edit control part 209 pulls out the head like Example 1 by controlling the camera control part 104 and the tape information acquisition part 105and fast forwarding or rolling back magnetic tape. When the magnetic tape of an editing object has a blank partthe edit control part 209 is sent to the position discrimination part 212 by making into a blank number the number of

times of reset of the time code reset whenever a blank part enters. The position discrimination part 212 compares the blank number of the edit scene received from the edit control part 209 with the blank number of the edit scene of the magnetic tape information acquired from the database 111. If the blank number of the scene acquired from the scene and the database 111 of magnetic tape of the search midst is in agreementa blank number coincidence signal will be sent to the edit control part 209. The edit control part 209 will pull out the head to the head frame of an edit scene like the case of Example 1if a blank number coincidence signal is received. In search of a sceneit is also possible for the edit control part 209 to receive a blank number from the position discrimination part 212and to control search as an initial value of the number of times of reset of this.

[0041]

[Effect of the Invention]As explained aboveaccording to the video editing device of this invention****** and the audio signal which were photoed and acquired with the noncommercial camcorder/movie as a digital video device are incorporated as DV data with a DV formatBy processingan image and a sound are edited in accordance with a time codeand it becomes possible to change into an MPEG format.

[0042]By making the time code recorded on the magnetic tape information held at the databaseand magnetic tape correspond according to the video editing device of this inventionEven when edit is impossible in real timeDV data of a DV format is edited and it becomes possible to change into the data of an MPEG format.

[0043]Even if the photoed magnetic tape has a blank part according to the video editing device of this inventionit becomes possible to carry out edit and conversion to an MPEG format correctlyand it becomes possible whether compilation information is a thing of the magnetic tape of an editing object furtherand to distinguish.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a block diagram showing the composition of the video editing device of Example 1 of this invention.

[Drawing 2]It is a block diagram showing the composition of the video editing device of Example 2 of this invention.

[Drawing 3]It is a block diagram showing the composition of the conventional video editing device.

[Description of Notations]

101 DV camera

102 DV capturing part

103 Memory

104 Camera control part

105 Tape information acquisition part

106 DV decoder
107 MPEG encoder
108 MPEG stream
109 and 209 Edit control part
110 Compilation information control section
111 Database
212 Position discrimination part